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09/893,431	06/29/2001	Henrik F. Bernheim	HAR66 823	5269

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EXAMINER	
MURPHY, RHONDA L	
ART UNIT	**PAPER NUMBER**
2667	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/893,431	BERNHEIM, HENRIK F.	
	Examiner	Art Unit	
	Rhonda Murphy	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *20 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-73* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-73* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to the amendment filed on July 20, 2005. Accordingly, claims 1-73 are currently pending in this application. New grounds of rejections were made with respect to claims 2-8, 23-25, 30-32, 39-45, 60-62, 66 and 67 and are moot.

Oath/Declaration

1. An oath or declaration has not been submitted with the instant application. Applicant is required to submit an oath or declaration.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 - 13, 15-19, 26, 28-29, 35-50, 52-56, 63-65, 68 and 71-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zendle (US 6,865,170) in view of Carney (US 6,011,785).

Regarding claims 1 and 38, Zendle teaches a point to multipoint wireless communication system between a hub site and remote nodes (col. 4, lines 49-55); the communication system comprises a hub (Fig. 7, 704) and multiple remote subscriber systems (nodes -716) located within a sector communicating with hub radio equipment to establish wireless links between the hub and subscribers (col. 7, lines 5-11). The

subscribers include interfaces to connect to remote value added service nodes (remote computers systems), (col. 5, lines 7-10); and the hub includes: indoor units 622 with line cards (signal processors) coupled to antennas (602; col. 6, lines 42-44), and a hub controller 626 connected to an external computer system via the backbone (col. 6, lines 45-49; see Fig. 6B).

Zendle does not explicitly disclose a bus structure connected to the indoor units (signal processors) and the controller.

However, Carney teaches a bus structure (Fig. 1, bus 17) connected to digital signal processors (18) and controller (30). Carney also teaches adding more DSPs to support additional channels as traffic increases (col. 3, lines 57-60).

In view of this, it would have been obvious to one skilled in the art to include such bus structure and insertion of additional processors, for the purpose of increasing the communication capacity at the hub site, in order to meet the additional bandwidth requirements.

Regarding claims 2 and 39, Zendle teaches a plurality of wireless communication link interfaces. Zendle fails to disclose the link interfaces being interchangeably connected to any one of a plurality of communication signal processors.

However, Carney teaches link interfaces being interchangeably connected to any one of a plurality of communication signal processors (col. 11, lines 17-27).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by interchanging the link interfaces with multiple signal processors, in order to provide a more adaptable connection to the processors.

Regarding claims 3 and 40, Zendle teaches the limitations described above in the rejection of claim 2. Zendle fails to disclose a second communication signal processor operatively connected to at least one of the plurality of wireless communication link interfaces and to said bus structure wherein said at least one of the plurality of wireless communication link interfaces is disconnected from said first communication signal processor so as to be connected to said second communication signal processor.

However, Carney teaches a second communication signal processor operatively connected to at least one of the plurality of wireless communication link interfaces (DSPs) and to said bus structure wherein said at least one of the plurality of wireless communication link interfaces is disconnected from said first communication signal processor so as to be connected to said second communication signal processor (col. 10, lines 46-54; wherein the DSPs are allocated as needed).

Regarding claims 4 and 41, Zendle teaches the limitations described above in the rejection of claim 3. Zendle fails to explicitly disclose doubling the communication capacity between the hub and nodes, when a second communication signal processor is added.

However, it is known in the art that the addition of signal processors to a communication system will increase the communication capacity to some degree.

Therefore, it would have been obvious for the communication capacity to double, since the addition of processors will allow for greater capacity.

Regarding claims 5 and 42, Zendle teaches the plurality of wireless communication link interfaces establishes a wireless communication link with at least a one of the plural

nodes whereby each one of said wireless communication links is substantially independent of the others of said wireless communication links (see Fig. 6b; col. 6, lines 30-36).

Regarding claims 6 and 43, Zendle teaches the limitation described above in the rejection of claim 5. Zendle fails to disclose the first and second communication signal processors and each of the plurality of wireless communication link interfaces operating using a common intermediate frequency.

However, it is known in the art for processors and communication links to operate on a common intermediate frequency.

Regarding claims 7 and 44, Zendle teaches the communication controller capable of directing information from the external computer system to certain ones of the plural nodes by directing the information to the communication signal processors associated with the wireless communication link between the hub and said certain ones of the plural nodes (col. 6, lines 42-49).

Regarding claims 8 and 45, Zendle teaches external computer is selected from the group consisting of: a public switched telephone network, a private network, a private branch exchange, a router, a fiber optic network, and the internet (Fig. 7).

Regarding claims 9, 35, 46 and 71, Zendle further teaches modulation techniques that provide significant increase in available bandwidth per channel (col. 8, lines 22-23). Although, Zendle does not explicitly describe the signal processor as a modem, Examiner takes official notice that it is well known in the art that modems are communication processors used to modulate data into a form suitable for transmission.

Thus for this reason, it would have been obvious to one skilled in the art to include modems as the communication signal processor.

Regarding claims 10, 11, 36, 47, 48 and 72, in addition to the teachings described in the above rejection of claim 9, Examiner takes official notice that it is well known in the art for modems to be multiport modems and capable of providing communications at multiple levels of information density. Therefore, it would have been obvious to one skilled in the art to include multiport modems that provide various levels of information density, for the purpose of providing data rates that optimizes bandwidth usage.

Regarding claims 12 and 49, in addition to the teachings described in the above rejection of claim 11, Zendle further teaches the hub controller managing the operation and data transfer within the hub site (col. 6, lines 45-48).

Regarding claims 13, 50 and 68, Zendle further teaches antennas transmitting to sectors with a beamwidth from 15 to 90 degrees wide (col. 6, lines 11-18).

Regarding claims 15 and 52, Zendle further teaches radios operating in the millimeter frequency range (col. 1, lines 11-18).

Regarding claims 16 and 53, Zendle further teaches first and second sectors operating on a first and second frequency, where the first and second frequencies are separated thereby minimizing co-channel interference (see claim 1 and col. 3, lines 25-33).

Regarding claims 17 and 54, Zendle teaches sectors operating in different communication channels. Zendle does not disclose a CDMA channel as one of the communication channels.

However, Carney teaches use of CDMA channels made available and processed by the processors (col. 10, lines 54-57).

In view of this, it would have been obvious to one skilled in the art to include CDMA channels in the sectors, for the purpose of providing orthogonal signals to isolate the signals in different sectors, thereby avoiding interference and allowing for a secure transmission.

Regarding claims 18, 19, 55 and 56, Zendle further teaches TDMA and FDMA channels (col. 9, lines 12-17).

Regarding claims 23 and 60, Zendle a plurality of communication signal processors whereby each one of the plurality of communication signal processors is operatively connected to: a separate one of said plurality of wireless communication link interfaces (Fig. 6).

Zendle fails to explicitly disclose the signal processors operatively connected to the bus structure.

However, Carney teaches a bus structure (Fig. 1, bus 17) connected to digital signal processors (18).

In view of this, it would have been obvious to one skilled in the art to include such bus structure, for the purpose of increasing the communication capacity at the hub site by adding processors along the bus.

Regarding claims 24 and 61, Zendle teaches the same limitations described above in the rejection of claims 5 and 42.

Regarding claims 25 and 62, as described above, the combined system of Zendle and Carney teaches an additional communication signal processor operatively connected to the bus structure and to a plurality of wireless communication link interfaces. Carney further teaches processors connected to the bus and link interfaces to thereby establish a redundant wireless communication link (col. 10, lines 46-50).

Regarding claims 26 and 63, Zendle further teaches the communication system of claims 1 and 38 comprising multiple hubs (see Fig. 7).

Regarding claims 28 and 64, the combined system of Zendle and Carney teach the same limitations described in the rejection of claim 1. In addition, Zendle teaches a point to multipoint system operating in the millimeter microwave radio range with a broadband backbone network (col. 1, lines 11-18), wherein the system is adapted to provide levels of communication capacity between the hub and nodes by adding an additional hub radio unit 620 and antenna for a sector (col. 7, lines 9-17).

Regarding claims 29 and 65, Zendle and Carney both teach a system comprising radio modules and signal processors. The number of radio modules and signal processors utilized is merely a design choice. Therefore, it would have been obvious to one skilled in the art to develop a system using more radio modules than signal processors, for the purpose of having equipment available to deliver services in the event of an expansion.

Regarding claims 37 and 73, Zendle teaches communication signal processors as indoor units with line cards (Fig. 8), but fails to explicitly disclose an expandable bus structure.

However, Carney teaches DSPs added to the base station via an expandable bus structure (Fig. 1, col. 3, lines 57-60).

In view of this, it would have been obvious to one skilled in the art to include such bus structure, for the purpose of increasing the communication capacity at the hub site, in order to meet the additional bandwidth requirements.

3. Claims 20-22 and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zendle and Carney, in view of Stanwood et al. (US 6,731,946). **Regarding claims 20-22 and 57-59**, the combined system of Zendle and Carney teach a TDMA communication channel. Zendle and Carney fail to teach an asymmetric time division duplexed (TDD) channel wherein the asymmetry is dynamically adjustable.

However, Stanwood teaches an asymmetric TDD system since the TDD frame is divided into a downlink time and uplink time (col. 29, lines 8-10). In addition, the system is an adaptive TDD system that dynamically adjusts the number of time slots allocated to uplink and downlink times (col. 29, lines 12-16).

In view of this, it would have been obvious to one skilled in the art to include an asymmetric dynamically adjustable TDD channel, in order to provide the most efficient transfer of data from one location to another.

4. Claims 14, 27, 33, 34, 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zendle and Carney, in view of Foster, Jr. et al. (US 6,016,313).

Regarding claims 14, 34 and 70, the combined system of Zendle and Carney teach a communication system comprising radio modules. Zendle and Carney fail to teach a common intermediate frequency and radios operating using a radio frequency different than that of the other radios.

However, Foster teaches adjusting various intermediate frequencies of the different modems to a common intermediate frequency (col. 11, lines 31-43). Foster also teaches each antenna including a tuner to convert the IF to the desired RF for radio communication. Thus, providing different radio frequencies.

In view of this, it would have been obvious to one skilled in the art to include a common IF and different radio frequencies, in order to provide a more efficient means of up-converting and/or down-converting signals.

Regarding claims 27, Zendle and Carney teach the same limitations as described in the rejection of claim 1. Furthermore, Zendle teaches a hub connected to service nodes (computer networks) for the communication of data (Fig. 7, col. 6, lines 61-67). Although Zendle teaches multiple nodes spaced apart from the hub, Zendle does not teach the nodes connected to a computer network different than the computer network connected to the hub.

However, Foster teaches a plurality of nodes (Fig. 6, 150-152) connected to a computer network other than that which is connected to the hub (Fig. 6, network 110, 120, 130).

In view of this, it would have been obvious to one skilled in the art to allow the nodes to connect to another computer network, for the purpose of expanding its communication capabilities to other systems that are not associated with the hub.

Regarding claims 33 and 69, the combined system of Zendle and Carney teach a communication system comprising radio modules. Zendle and Carne fail to teach each radio modules operating at the same intermediate frequency.

However, Foster teaches adjusting various intermediate frequencies of the different modems to a common intermediate frequency (col. 11, lines 31-43).

In view of this, it would have been obvious to one skilled in the art to include radio modules with a common IF, in order to provide a more efficient means of up-converting and/or down-converting signals.

5. Claims 30-32 and 66-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zendle and Carney as applied to claims 28 and 64 above, and further in view of Kay et al. (US 2004/0246891).

Regarding claims 30 and 66, the combined system of Zendle and Carney teach the limitations described above in the rejection of claims 28 and 64.

Zendle and Carney fail to explicitly disclose at least one radio module equaling four radio modules.

However, Kay teaches at least one radio module equaling four radio modules (page 7, paragraph 85).

In view of this, it would have been obvious to one skilled in the art to modify Zendle and Carney's system by including one radio module that equals four radio modules, so as to provide for a more efficient and cost effective wireless communication system.

Regarding claims 31 and 67, the combined system of Zendle and Carney teach the limitations described above in the rejection of claims 30 and 66.

Zendle and Carney fail to explicitly disclose each of the four radio modules having a 90-degree azimuthal beamwidth.

However, Kay teaches each of the four radio modules having a 90-degree azimuthal beamwidth (page 9, paragraph 106).

In view of this, it would have been obvious to one skilled in the art to modify Zendle and Carney's system by including each radio module with a 90-degree beamwidth, in order to provide a 90-degree sector coverage area utilizing four radio modules.

Regarding claim 32, the combined system of Zendle and Carney teach the limitations described above in the rejection of claim 30.

Zendle and Carney fail to explicitly disclose the bandwidth of the radios being selected from the group consisting of: 15 degree, 30 degree, 45 degree, and 60 degree

However, Kay teaches the bandwidth of the radios being selected from the group consisting of: 15 degree, 30 degree, 45 degree, and 60 degree (page 9, paragraph 106).

In view of this, it would have been obvious to one skilled in the art to modify Zendle and Carney's system by enabling bandwidths of the radios to be of various degrees, for the purpose allowing radios to provide a more efficient wireless communication system, suitable to the current communication requirement of that particular sector.

Response to Arguments

Applicant's arguments filed on July 20, 2005 have been fully considered but they are not persuasive. As to claims 1, 9-22, 26-29, 33-38, 46-59, 63-65 and 68-73, applicant argues Zendle, in view of Carney, fails to disclose a bus structure. Contrary to the arguments on page 4 indicating Zendle teaches a point-to-point system, Zendle discloses a point to multipoint wireless system (col. 4, lines 53-57), which is capable of supporting a bus structure. Zendle teaches a hub site including hub indoor units 622 coupled to the hub radio units 620, the hub IDUs connecting to hub controllers 626 which manage the operation and data transfer within the hub site 601, and a backbone interface to enable connection and data transfer with a network backbone (col. 6, lines 42-59). An expansion in Zendle's network would include the addition of hub IDUs. Therefore, in combination with Carney's teaching of a bus structure connected to digital signal processors (18) and controller (30), the Zendle and Carney references read upon the claimed limitations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571) 272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rhonda Murphy
Examiner
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05/3/05